

Amendment

In The Claims

Please amend the claims as follows:

Claim 1. (Currently Amended) An optical element operable for performing nonlinear frequency
5 conversion and amplitude modulation simultaneously, comprising a nonlinear optical crystal having
an electrode-coated dispersion section in quasi-phase-matched (QPM) sections for electrically
controlling the relative phase among the mixing waves therein by applying an electric field thereto,
whereby performing said nonlinear frequency conversion and amplitude modulation
simultaneously[.];

10 wherein said electrode-coated dispersion section is sandwiched between quasi-phase-matched
nonlinear gratings, said nonlinear gratings have both the grating vectors parallel to the wave vector of
said mixing waves, and said amplitude modulation is dynamically adjusted to the desirable
modulation regime with a direct-current voltage offset on the electrodes.

Claim 2. (Previously Amended) The optical element according to claim 1, wherein said
15 nonlinear optical crystal is a material operable for being made into quasi-phase-matched (QPM)
nonlinear optical elements.

Claim 3. (Original) The optical element according to claim 2, wherein said nonlinear optical
crystal is made of the material selected from a group consisting of LiNbO_3 , LiTaO_3 , KTiOPO_4 , and
 RbTiOAsO_4 .

20 Claim 4. (Canceled)

Claim 5. (Original) The optical element according to claim 1, wherein said electrode-coated dispersion section is coated with metal electrodes on two opposite surface thereof.

Claim 6. (Original) The optical element according to claim 1, wherein said nonlinear frequency conversion includes second harmonic generation (SHG), difference frequency generation (DFG), sum
5 frequency generation (SFG), optical parametric generation (OPG), optical parametric amplification (OPA), and optical parametric oscillation (OPO).

Claims 7-14 (Canceled)

Claim 15. (New) An optical element operable for performing nonlinear frequency conversion and amplitude modulation simultaneously, comprising a nonlinear optical crystal having an electrode-
10 coated dispersion section in quasi-phase-matched (QPM) sections for electrically controlling the relative phase among the mixing waves therein by applying an electric field thereto, whereby performing said nonlinear frequency conversion and amplitude modulation simultaneously;

wherein said electrode-coated dispersion section is sandwiched between quasi-phase-matched nonlinear gratings, one of said nonlinear gratings has the grating vector parallel to the wave vector of
15 said mixing waves, the other said nonlinear grating has the grating vector forming an angle with respect to the wave vector of said mixing waves, and said amplitude modulation is dynamically adjusted to the desirable modulation regime by laterally translating the nonlinear crystal with respect to stationary mixing waves.

Claim 16. (New) The optical element according to claim 15, wherein said nonlinear optical
20 crystal is a material operable for being made into quasi-phase-matched (QPM) nonlinear optical elements.

Claim 17. (New) The optical element according to claim 16, wherein said nonlinear optical crystal is made of the material selected from a group consisting of LiNbO_3 , LiTaO_3 , KTiOPO_4 , and RbTiOAsO_4 .

5 Claim 18. (New) The optical element according to claim 15, wherein said electrode-coated dispersion section is coated with metal electrodes on two opposite surface thereof.

Claim 19. (New) The optical element according to claim 15, wherein said nonlinear frequency conversion includes second harmonic generation (SHG), difference frequency generation (DFG), sum frequency generation (SFG), optical parametric generation (OPG), optical parametric amplification (OPA), and optical parametric oscillation (OPO).